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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/654,949	09/01/2000	Peter Brittingham	128534-01801 (07028591)	7078

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EXAMINER	
WILLIAMS, ROSS A	

ART UNIT	PAPER NUMBER
3714	

MAIL DATE	DELIVERY MODE
06/26/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/654,949	BRITTINGHAM ET AL.	
	Examiner	Art Unit	
	ROSS A. WILLIAMS	3714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 March 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,13-16,19 and 20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,13-16,19 and 20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

Claims 1 – 5, 13 – 17, 19 and 20 are currently pending.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-5, 13-16, and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sweitzer et al. (US 6,018,617) in view of Swanson (US 5,657,256).

[Claims 1, 5, 14]: Regarding Claims 1, 5, and 14, Sweitzer discloses obtaining a test item (i.e., problem). See Abstract. Sweitzer discloses creating a test model by identifying elements of the test item to be variabilized and variabilizing the elements to create variables in Col.12: 34-37:

> The variation rules may assign substitution variables (variables used in the problem layout) or temporary variables (variables used only within the variation rules).

Sweitzer discloses defining the variables in Col.12: 49-50:

> Substitution variables are defined using the variation rule syntax, which is not case sensitive.

Sweitzer discloses generating a test item variant (i.e., instance of a problem) of the test item by assigning values to the variables using a simultaneous constraint solver, wherein the simultaneous constraint solver resolves one or more constraints pertaining to variables in Col.12: 41-46:

> To produce an instance of a problem 32, the list of variation rules is evaluated sequentially from top to bottom. If a constraint is not satisfied, the current pass through the list is abandoned and evaluation restarts from the top of the list. A valid instance of the problem results when the end of the variation rule list is reached.

Sweitzer discloses the use of a constraint solver that solves multiple constraints in a sequential top-down fashion. Thus Sweitzer does not specifically disclose a constraint solver that solve for will simultaneously solve multiple constraints at the same time. However, Swanson discloses a test item generation system that solves for multiple constraints (Swanson 8:5 – 47). Swanson discloses a recognized problem when attempting to solve for multiple constraints. Swanson discloses that and important quality of a test construction model is "coming close as possible to meeting all constraints simultaneously" (Swanson 8:5 – 15).

It would be obvious to one of ordinary skill to modify Sweitzer in view of Swanson to provide a system or method that uses a constraint solver that is able to satisfy or simultaneously solve for multiple constraints at the same time. Swanson recognizes a need to come as close as possible to solving multiple constraints at the same time or simultaneously. This would provide a significant time savings in the generation of dynamic test items to be presented to a user of the system.

[Claims 2, 15]: Regarding Claims 2 and 15, Sweitzer discloses wherein said model creation further comprises specifying constraints that define a relationship among the variables in Col.12: 50-53:

> This language supports basic mathematical operations, **relational** comparisons, and logical combinations using general expressions and operator rotation. Function (procedure) references provide extended capabilities.

[Claims 3-4,13,16]: Regarding Claims 3-4,13, and 16, Sweitzer discloses the step of accepting and retrievably storing the test item variant and the test item model (i.e., instance of a generalized problem) in Col.11: 57-63 and Col.12: 24-27, 45-46:

> As was discussed above, problem content is created by an author who is typically a professional programmer; but may be the end user of the test operating software running on the personal computer 13. The content of the problem is expressed in machine-usable form using the authoring tool 30, which stores each problem 32 in a separate file on disk. Problems 32 are organized for easy retrieval in a single disk file, i.e. one or more problem books 34. The set of programs that support collecting problems 32 into the problem books 34 is referred to as the build tools 70.

> Each problem 32 is described by a few key parameters. These parameters assist the user in selecting problems 32 to include in a worksheet 50. Problems 32 within each problem book 34 are grouped into objectives. Objectives are grouped into sections and sections are grouped into chapters. Problems are not necessarily self-contained. They may refer to external objects, which are included in the representation at print time. Multiple problems can include the same external object. These objects are stored within the problem book 34 file.
>
> The authoring tool 30 and print engine 90, discussed in greater detail below, use variation rules which are stored in the variation rules module or engine 80 (FIG. 8) and define instances of a generalized problem.
>
> A valid instance of the problem results when the end of the variation rule list is reached.

[Claim 19]: Regarding Claim 19, Sweitzer discloses wherein variables can be defined by values which are variables (e.g., mathematical expressions) in Col.12: 30-32:

> Variables may be replaced with numbers, text, graphics, or mathematical expressions.

[Claim 20]: Regarding Claim 20, Sweitzer discloses wherein the variables are new variables (e.g., substitution variables, temporary variables) for which new constraints are defined as needed in Col.12: 34-38:

> The variation rules for a problem 30 are an ordered list of definitions and constraints expressed in a simple language. The variation rules may assign substitution variables (variables used in the problem layout) or temporary variables (variables used only within the variation rules). The variation rules may also impose constraints on the relationship between variables.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sweitzer et al. (US 6,018,617) in view of Swanson (US 5,657,256).

[Claim 17] Sweitzer does not disclose expressly wherein the test item model constraints are simultaneously solved using PROLOG IV and Test Creation Assistant constraint language. Instead, Sweitzer discloses the use of C++ in Col.6: 28-39 and variation rules language to simultaneously solve test item model constraints in Col.10: 61-63.

At the time the invention was made, it would have been an obvious matter of design choice to a person of ordinary skill in the art to use C++ and variation rules language to simultaneously solve test item model constraints because Applicant has not disclosed that using PROLOG IV and Test Creation Assistant constraint language, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Sweitzer's invention, and applicant's invention, to perform equally well with either the languages taught by Sweitzer or the languages claimed by Applicant because both languages would perform the same function of generating multiple instances of a test item.

Therefore, it would have been prima facie obvious to modify Sweitzer to obtain the invention as specified in claim 17 because such a modification would have been considered a mere design consideration which fails to patentably distinguish over the prior art of Sweitzer.

Response to Arguments

Applicant's arguments filed 3/21/2008 have been fully considered but they are not persuasive.

The Applicant states *"…that the combination of Sweitzer and Swanson provide any implemented solution that includes a simultaneous constraint solver as provided by the present invention. Indeed, Swanson actually teaches away from the assertion that it would be obvious to one of ordinary skill to modify Sweitzer to "use a constraint solver to satisfy or simultaneously solve for multiple constraints". See for example column 6 line 65 to column 7 line 5 of Sweitzer, which are statements that note the infeasibility of a prior art approach to a solution to the recognized problem."* The Examiner respectfully disagrees. Swanson discloses a well recognized problem of solving for constraints simultaneously. Specifically that in relation to test assembly, "*test assembly is less concerned with optimizing some function of the items selected (for example, maximizing test information or minimizing test length) or even meeting all of the constraints of interest, than it is with coming as close as possible to meeting all constraints simultaneously" (Swanson 8:5 - 10).* While, Swanson discloses that it is "*is difficult or impossible to satisfy, or simply because the item pool is not sufficiently rich to satisfy all of the constraints simultaneously" (Swanson 6:65 – 7:1),* this is not a direct teaching away from a motivation to try and solve a plurality of constraints simultaneously. In fact as noted by the Applicant this statement is in regards to a prior art approach to a solution to the recognized problem and not a specific statement toward the invention of Swanson.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROSS A. WILLIAMS whose telephone number is (571)272-5911. The examiner can normally be reached on Mon-Fri 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ronald Laneau can be reached on (571) 272-6784. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/R. A. W./
Examiner, Art Unit 3714
6/18/08

/Ronald Laneau/
Supervisory Patent Examiner, Art Unit 3714
06/21/08